CLAIMS:

1. A method of forming a reflective device which generates an optically variable image which varies according to the angle of observation, the method comprising the steps of:

providing a primary pattern which encodes a latent image, the primary pattern having a plurality of image elements; and

providing a corresponding secondary pattern which will decode the primary pattern to allow the latent image to be observed when the primary and secondary patterns are in at least one registration, wherein the secondary pattern is provided by a micro mirror array (MMA) having a plurality of each of at least two different types of micro mirror elements,

wherein the primary pattern is provided such that predetermined image elements of the primary pattern render reflection effects from predetermined micro mirror elements of the MMA optically ineffective at least at one observation angle when the reflective device is illuminated with a light source to thereby enable the latent image to be observed.

2. A method as claimed in claim 1, comprising overlaying the primary pattern on the secondary pattern.

3. A method as claimed in claim 1, comprising rendering the micro mirror elements optically ineffective to form the primary pattern.

4. A method as claimed in claim 1, comprising printing the primary pattern on top of a background MMA.

5. A method as claimed in claim 1, comprisingproducing the micro mirror elements by:

I) producing a variable transparency photomask

by electron beam lithography and wet or dry etching techniques and;

II) using the photomask in an optical contact printing or projection system to create a surface relief pattern of two types of interlaced micro mirror structures arranged in a desired pattern;

III) producing a printing plate embossing die by the use of electroplating techniques applied to the created micro mirror array structure; and

IV) applying ink to a paper or polymer substrate using screen printing techniques and embossing the micro mirror array structure into the inked substrate.d

6. A method as claimed in claim 1, comprising providing said at least two types of micro mirror elements regions in a regular pattern.

7. A method as claimed in claim 6, comprising arranging said at least two types of micro mirror elements into pixellated diffraction grating regions.

8. A method as claimed in claim 6, comprising arranging said at least two types of micro mirror elements into a track-like pattern.

9. A method as claimed in claim 7, comprising arranging a plurality of two different types of micro mirror elements in a rectangular array so that they alternate in each of the horizontal and vertical axes.

10. A method as claimed in claim 2, comprising providing the primary pattern upon a transparent substrate, providing the secondary pattern in the form of an embossed substrate and aligning the primary pattern with the secondary pattern in correct register such that the image elements of the latent image render micro mirror elements of the secondary pattern optically ineffective.

11. A method as claimed in claim 2, comprising providing a MMA encoded with a secure generic optical variability effect, overlaying a primary pattern encoded with image information specific to a particular latent image in such a way that the latent image.

12. A method as claimed in claim 3, comprising altering the MMA at selected locations within the OVD area corresponding to the primary pattern, by laser heating the MMA.

13. A method as claimed in claim 1, comprising producing said primary pattern using a modulated digital image technique.

14. A method as claimed in claim 13, comprising selecting said technique from the group of SAM, μ-SAM, PHASEGRAM, TONAGRAM and a BINAGRAM.

15. A reflective device which generates an optically variable image which varies according to the angle of observation, the reflective device comprising:

a primary pattern which encodes a latent image, the primary pattern having a plurality of image elements; and

a corresponding secondary pattern which will decode the primary pattern to allow the latent image to be observed when the primary and secondary patterns are in at least one registration, wherein the secondary pattern is provided by a micro mirror array (MMA) comprising a plurality of each of at least two different types of micro mirror elements, and

wherein the primary pattern is provided such that the predetermined image elements of the primary pattern render reflection effects from predetermined micro mirror elements of the MMA optically ineffective at least at one

observation angle when the authentication device is illuminated with a light source to thereby enable the latent image to be observed.

16. A reflective device as claimed in claim 15, wherein said primary pattern is overlaid on the secondary pattern.

17. A reflective device as claimed in claim 15, wherein the primary pattern is provided by altering the MMA.

18. A reflective device as claimed in claim 15, wherein said primary pattern printed on top of a background MMA.

19. A reflective device as claimed in claim 15, wherein said at least two types of micro mirror elements form a regular pattern.

20. A reflective device as claimed in claim 19, wherein said regular pattern is a pixellated pattern.

21. A reflective device as claimed in claim 19, wherein said regular pattern is a track-like pattern.

22. A reflective device as claimed in claim 20, wherein a plurality of two different types of micro mirror elements are arranged in a rectangular array so that they alternate in each of the horizontal and vertical axes to thereby form a checkerboard pattern.

23. A reflective device as claimed in claim 15, comprising two different types of micro mirror elements.

24. A reflective device as claimed in claim 15, wherein the primary pattern is provided upon a transparent

substrate, and the secondary pattern is an embossed substrate (OVD), the primary pattern being aligned with the OVD secondary pattern in correct register such that the image elements of the latent image encoded in the primary pattern are observable as having different visual values at certain viewing angles when illuminated with a light source.

25. A reflective device as claimed in claim 24, wherein the image elements are transparent and opaque.

26. A reflective device as claimed in claim 24, wherein the image elements are transparent or coloured

27. A reflective device as claimed in claim 24, wherein the embossed substrate is encoded to produce a secure generic optical variability effect and the overlaid primary pattern is encoded with image information specific to a particular latent image.

28. A reflective device as claimed in claim 17, wherein the MMA is altered at selected locations within the primary pattern, by heating the MMA.

29. A reflective device as claimed in claim 20, incorporating a photosensitive layer above an embossed layer which provides the secondary pattern, whereby the primary pattern can be printed by selective irradiation of the photosensitive layer.

30. A reflective device as claimed in claim 15, wherein said primary pattern comprises a modulated digital image.

31. A reflective device as claimed in claim 30, wherein said modulated digital image is one of a SAM image, μ-SAM image, a PHASEGRAM, a TONAGRAM or a BINAGRAM.

32. A reflective device as claimed in claim 15, which constitutes a reflective authentication device.

33. A reflective device as claimed in claim 15, which constitutes a novelty item.

34. A document or instrument incorporating a diffractive device as claimed in claim 15.

35. A reflective device as claimed in claim 18, wherein the primary and secondary patterns are constructed such that a first image is observable at at least a first angle of view and a second image is observed at at least a second angle of view.

36. A reflective device as claimed in claim 35, wherein said first image is an image of a person.

37. A reflective device as claimed in claim 36, wherein said second image is an image of a logo, a coat of arms or the like.

38. A diffractive device as claimed in claim 38, wherein said second image encodes data.

39. A diffractive device as claimed in claim 38, wherein said second image is a bar code.

40. A diffractive device as claimed in claim 35, wherein both the first and second images encode data.

41. A diffractive device as claimed in claim 40, wherein both the first and second images are bar codes.